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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/761,145	TUPMAN ET AL.	
	Examiner	Art Unit	
	Arthur O. Hall	3709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/4/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-66* is/are pending in the application.

4a) Of the above claim(s) *52-58 and 62-66* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51 and 59-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/2/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 7/2/2004 has been acknowledged by the examiner.

Election/Restrictions

Applicant's election of Species I in the reply filed on 7/24/2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse. (MPEP § 818.03(a)).

Priority

Applicant is advised of possible benefits under 35 U.S.C. 119(a)-(d), wherein an application for patent filed in the United States may be entitled to the benefit of the filing date of a prior application filed in a foreign country.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The disclosure is objected to because of the following informalities: there is no prior support for the term "finger" described on page 8, line 4. However, Examiner finds prior support on page 6, line 22 for the term "formation" as described at least on page 7, line 23. Examiner suggests that applicant replace the term "finger" with the term "formation" to provide clear disclosure.

Appropriate correction is required.

Claim Objections

Claims 10 and 41 are objected to because of the following informalities: The degree symbol "°" is used in the claims to replace the term "degree(s)," which is improper for the purpose of publishing since the degree symbol may be lost during the publication process causing a lack of clarity with respect to the value that is modifies. Examiner suggests that applicant recite the term "degree(s)" instead of the degree symbol. Appropriate correction is required.

Claim 16 is objected to because of the following informalities: there is no support for the term "finger" in the claim other than the disclosure on page 8, line 4, which is not previously supported by the disclosure. However, Examiner finds prior support on page 6, line 22 for the term "formation" as described at least on page 7, line 23. Examiner suggests that applicant remove the term "finger" and, instead, recite the term "formation" in the claim. Appropriate correction is required.

Claim 8 is objected to because of the following informalities: there is no support in the disclosure for "signal signals;" however, Examiner finds support for the term "second signal" in the claim. Examiner suggests that applicant remove the term "signal signals" and, instead, recite the term "second signal" in the claim. Appropriate correction is required.

The claims are replete the above informalities. Examiner suggests that applicant review the claims and make all appropriate corrections.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14, 27, 36 and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 36 recites the limitation "the size said increment" in lines 15-16 on page 65. However, there is a lack of clarity as to the meaning of this limitation. Thus, there is insufficient antecedent basis for this limitation in the claim.

Claims 14, 27, and 45 recite the limitation "unique" in line 14 on page 57, line 28 on page 62 and line 11 on page 68, respectively. However, the term "unique" is indefinite as described at least on page 7, lines 18-19 and page 12, line 29 because there is specific range of values associated with this term, thereby allowing the term to have any value conceivable. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2-6, 9-37, 40-51 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russell et al. (US Patent 5,997,405; hereinafter Russell) in view of Hodgetts (US Patent 5,351,951). Figures are described with reference characters where necessary for clarity.

Regarding claims 1, 23, 31, 34 and 59, Russell teaches

a golf stroke / putting practicing aid / training device (column 2, lines 58-61, Russell) comprises:

a supporting structure / base member which is adapted to stand stably on the ground in use (column 2, lines 61-64 and Fig. 1, 4, Russell);

a rotator defining an axis of rotation, said rotator being rotatably mounted to said supporting structure / base member such that said axis of rotation extends substantially vertically when the supporting structure stands on the ground, said rotator being adapted for rotation about said axis / substantially vertical axis (column 2, line 64 to column 3, line 7 and Fig. 1, 10, Russell; the wheel rotates about a vertical axis defined by a shaft);

a rigid or substantially rigid arm having an inner end and an outer end, said inner end being connected to said rotator, said arm being arranged such that said outer end is adapted to rotate in a substantially horizontal plane upon rotation of the rotator, or **in other words**, guiding means for constraining said target to move in a substantially horizontal orbit when struck (column 3, lines 9-15 and Fig. 1, 20, Russell);

a target adapted to be struck by a golf-club / golf putter, said target being joined to said outer end of said arm, or **in other words**, mounted to said rotator, such that when the target is struck by a golf-club / golf putter, the target is caused to rotate about

said axis / axis of rotation in a substantially horizontal orbit (column 3, lines 8-9 and Fig. 1, 18, Russell);

a first optical encoder ring mounted on said rotator for rotation therewith, said first optical encoder ring comprising a plurality of regular formations which are circumferentially spaced about said axis of rotation at substantially equal intervals, said ring having a first inner side and a second outer side (column 3, lines 46-51 and Fig. 1, 28 and 32 and Fig. 2(b), 32, Russell; the optical ring includes fingers or formations arranged in intervals about the ring and having gaps therebetween);

a first photo-emitter adapted to emit a beam of light, and a first photo-detector adapted to detect light emitted by said first photo-emitter, said first photo-emitter and first photo-detector being fixedly mounted to said supporting structure on opposite sides of said first optical encoder ring, such that said beam is directed across the formations of the first optical encoder ring towards said first photo-detector, such that said formations interrupt the beam intermittently as the rotator rotates to produce a series of pulses of light, which pulses of light are detected by said photo-detector to produce a first pulsed motion detection signal, whereby the time between successive pulses of said pulsed motion detection signal is proportional to the speed of said target, or **in other words**, measuring means for measuring the initial speed of the target when struck, or **in other words**, means for measuring the initial velocity of the rotator (column 3, line 52 to column 4, line 13, Russell; the breaking of the light emitted by the photo-emitter to the photo-detector intermittently based on the fingers and gaps creates a signal proportional to the velocity of the target); and

a microcontroller / processing means having an input which is adapted to receive said first motion detection signal, a clock configured to provide a constant measure of time, or **in other words**, clock means for measuring the time elapsed from striking the target, a microprocessor / processing means adapted continually to process said first motion detection signal to determine the actual instantaneous speed of the target, or **in other words**, means for continually measuring the actual instantaneous speed of the rotator at predetermined elapsed times after the target is struck, said microprocessor being programmed to detect when the target is struck and to calculate the initial speed

of said target (column 4, lines 19-30, column 4, lines 55-64 and Fig. 1, 54, Russell; a circuit board or microcontroller having a microprocessor or CPU, inherently having a clock or timer for measuring data transfer time since CPU's require time measurement to track data input and output to maintain data flow, determines the velocity equivalent to the true distance traveled by the ball based on the sensing time), a memory device storing distance information relating a total notional distance to be traveled by the target to said initial speed (column 4, lines 31-34, Russell), said microprocessor being programmed for determining from said initial speed and said distance information a particular notional total distance to be traveled by said target and for determining from said particular total notional distance a relationship between the notional instantaneous speed of the target and the time elapsed since the target was struck, or **in other words**, configured to determine a notional total distance that the target should travel in its orbit corresponding to said initial speed, or **in other words**, means for calculating a notional relationship between notional instantaneous speed of said rotator and elapsed time after striking from said notional total distance to be traveled (column 4, lines 34-38 and lines 55-63, Russell).

However, Russell does not substantially teach motor, motor controller, a microprocessor having motor control and home restoring features as claimed. Therefore, attention is directed to Hodgetts, which teaches

a motor which is mounted to said supporting structure and drivably coupled to the rotator for adjusting the speed of the rotator (column 4, line 34 to column 5, line 6, Hodgetts);

a motor controller / motion controlling means for controlling the motor (column 4, line 34 to column 5, line 6, Hodgetts);

the microprocessor being further programmed to compare continually the actual instantaneous speed of the target with said notional instantaneous speed to generate a velocity error value, and to generate a motor control signal corresponding to said velocity error value, or **in other words**, means for calculating a notional total distance to

be traveled from said initial velocity and said value of resistance to rotation, speed comparing means for comparing the actual instantaneous speed of the rotator at each elapsed time with the notional instantaneous speed (column 10, lines 19-38 and Fig. 11, 69, Hodgetts; the microprocessor measures the frequency of oscillation of the a golf club, which has a head or target fixed to the shaft or rigid arm, upon being struck or caused to rotate in an oscillating manner such that the rate of decay or error in the cycle to cycle velocity calculations are continually compared during the elapsed time);

an output adapted for outputting said motor control signal to said motor controller / motion controlling means for controlling the motor to adjust the actual instantaneous speed of the target to said notional instantaneous speed, such that the actual total distance traveled by said target in its orbit is substantially the same as said particular notional total distance, or **in other words**, adapted to control the movement of the target in its orbit when struck such that the target actually moves a total distance which is substantially the same as said notional total distance, or **in other words**, for controlling rotation of said rotator by applying a predetermined resistance to movement of the target to simulate the feel of putting a golf ball on a real green, or **in other words**, means for adjusting the speed of the rotator as necessary to the notional instantaneous speed (column 5, lines 6-27, Hodgetts; an output from a strain gauge associated with the motor control signal provides a continuous voltage proportional to the displacement of the club head or target during the elapsed time);

a target adapted to be struck by a golf-club from a home position (column 3, lines 25-36 and column 4, lines 47-55, Hodgetts; a home position or normal rest position of the club head or target is provided); and

home restoring means for restoring the target to the home position after the target has been moved from said home position (column 3, lines 25-36 and column 4, lines 47-55, Hodgetts; a home position or normal rest position of the club head or target is position at which the target comes to rest after being induced to move from the home position), said restoring means comprising; a detector for detecting when the target is at the home position; a motor which is drivingly coupled to said target; and motor controlling means for controlling operation of the motor which motor controlling means

causes the motor to drive said target until the detector detects that the target is at the home position whereupon the motor controlling means causes the motor and target to halt (column 3, lines 25-36 and column 4, lines 47-67, Hodgetts; the motor in connection with the motor controller drives the oscillation speed of the target and arm during excursion or displacement of the target until a rate of decay or error signal is input to damp the frequency of oscillation so as to return the target to the rest or home position at which point it would have been obvious at the time of invention for the motor to hold the position of the target since the motor is configured to mechanically hold the speed of the target).

Hodgetts suggests that a device that measures a golfers swing speeds with multiple test clubs and performs calculations for statistically determining the normal distribution based on the same swings will statistically determine the best club performance so as to provide the golfer with a club set having a common feel that will improve his game (column 1, lines 12-18 and column 1, line 66 to column 2, line 39, Hodgetts).

Thus, it would have been obvious to one having ordinary skill in the art at the time the applicant's invention was made to modify Russell in view of the teachings of Hodgetts for the purpose of providing the golf training device of Russell having motion sensing features that are interchangeable with or upgradeable to the motor, motor controller, microprocessor having motor control and home restoring features of Hodgetts in order to provide a golfer with a club set having a common feel based on the golfer's swing that will improve his game.

Regarding claims 2, 4-6, 18-22, 24, 28-30, 35-37 and 48-51, Russell teaches

Regarding claim 2, the notional total distance approximates the total distance that a standard golf ball would have traveled freely on a real putting green (column 4, lines 19-29, Russell).

Regarding claims 4 and 35, the measuring means / motion controlling means comprise a first motion detector which is adapted to generate a first pulsed motion detection signal in response to movement of the target, the frequency of said first pulsed signal corresponding to the speed of the target (column 3, line 52 to column 4, line 12, Russell).

Regarding claims 5 and 36, each pulse corresponds to movement of the target in said orbit by a predetermined increment of distance, said measuring means being configured to calculate the speed of the target from the time between successive pulses (column 3, line 52 to column 4, line 12, Russell).

Regarding claims 6 and 37, the first motion detector comprises a first rotatable part and a first fixed part, the first rotatable part being coupled to the target such that movement of the target in its orbit when struck causes corresponding rotation of said first rotatable part about an axis of rotation relative to the first fixed part, wherein one of said first rotatable and fixed parts comprises a first optical encoder ring which is disposed substantially co-axially with the axis of rotation, and the other of said parts comprises a first photo-emitter and a first photo-detector adapted to detect light emitted by said first photo-emitter, wherein said first optical encoder ring comprises a plurality of regular formations which are circumferentially spaced at substantially equal intervals about said encoder ring to define a plurality of regular gaps therebetween, said first photo-emitter is arranged to direct a beam of light at the first encoder ring, such that the formations intermittently interrupt the beam as the first rotatable part rotates to produce a series of pulses of light; and said first photo-detector is arranged to detect said pulses

of light and to generate a corresponding first pulsed motion detection signal in which each pulse corresponds to a pulse of light (column 3, line 44 to column 4, line 12, Russell; a first motion detector is provided and the formations or fingers for breaking the signal define a plurality of gaps between each formation or finger).

Regarding claims 18 and 48, the guiding means comprise a rigid or substantially rigid arm, said target being mounted on one end of the arm and the other end of the arm being secured to one of said first and second rotatable parts, or **in other words**, the target is connected to said rotator by a rigid or substantially rigid arm (column 3, lines 8-15, Russell).

Regarding claims 19, 28 and 49, a target comprises a standard golf ball (column 3, lines 8-9, Russell).

Regarding claims 20, 29 and 50, a display means for receiving and displaying information to a user is disclosed (column 4, lines 29-30 and lines 63-64, Russell).

Regarding claims 21, 30 and 51, communication means or a communication device for transmitting data to and/or receiving data from external equipment / external computer equipment is disclosed (column 4, lines 19-29, Russell; inputs and outputs of the circuit board are provided for receiving data from and sending data to the sensor, respectively).

Regarding claims 22, user input means for manually selecting of one or more parameters of operation of the practicing aid is disclosed (column 4, lines 38-55, Russell; user input or buttons and selector switches are provided for operating the training device in manual, automatic or various hand positions).

Regarding claim 24, the memory device stores a plurality of different, predetermined, user-selectable values of notional resistance to rotation of the rotator,

and stores distance information for each value of notional resistance relating the total notional distance to be traveled by the target to said initial speed, said microcontroller further comprises a user-selection input component which is adapted to enable a user to select a desired one of said predetermined values (column 4, lines 31-34 and lines 38-55, Russell).

Regarding claims 9, 14, 16-17, 25, 27, 32, 40, 45-47 and 60-61, Russell substantially teaches features of the claimed invention as described above.

However, Russell does not substantially teach a second motion detector using quadrature for determining direction of movement of the target, a home formation having a unique size and spacing and positioning proximate to the detector and a motion controlling means configured to apply user selected values of resistance as claimed. Therefore, attention is directed to Hodgetts, which teaches

Regarding claims 9, 25 and 40, a second motion detector comprising a second rotatable part and a second fixed part, the second rotatable part being coupled to the target such that movement of the target in its orbit when struck causes corresponding rotation of said second rotatable part about an axis of rotation relative to the second fixed part, wherein one of said second rotatable and fixed parts comprises a second optical encoder ring which is disposed substantially co-axially with the axis of rotation, and the other of said parts comprises a second photo-emitter and a second photo-detector adapted to detect light emitted by said second photo-emitter, wherein said second optical encoder ring comprises a plurality of regular formations which are circumferentially spaced at substantially equal intervals about said encoder ring to define a plurality of regular gaps therebetween, said second photo-emitter is arranged to direct a beam of light at the second encoder ring, such that the formations intermittently interrupt the beam as the second rotatable part rotates to produce a series

of pulses of light; and said second photo-detector is arranged to detect said pulses of light and to generate a corresponding second pulsed motion detection signal in which each pulse corresponds to a pulse of light, the first and second motion detectors being configured and arranged such the frequencies of said first and second pulsed signals are substantially the same, and the phases of the first and second pulsed signals are off-set such that the direction of movement of the target can be determined by quadrature is disclosed, or **in other words**,

a second optical encoder ring mounted to the rotator for rotation therewith, said second optical encoder ring being arranged substantially coaxially with said first optical encoder ring, and comprising a plurality of regular formations which are circumferentially spaced about said axis of rotation at substantially equal intervals, said ring having a first inner side and a second outer side; and

a second photo-emitter adapted to emit a beam of light, and a second photo-detector adapted to detect light emitted by said second photo-emitter, said second photo-emitter and second photo-detector being fixedly mounted to said supporting structure on opposite sides of said second optical encoder ring, such that said beam is directed across the formations of said second optical encoder ring, such that said formations can interrupt said beam intermittently as the rotator rotates to produce a series of pulses of light, which pulses of light are detected by said photo-detector to produce a second pulsed motion detection signal;

said first and second optical encoder rings, said first and second photo-emitters and said first and second photo-detectors being configured and arranged such the frequencies of said first and second pulsed signals are substantially the same, and the phases of the first and second pulsed signals are off-set;

wherein said input is further adapted to receive said second motion detection signal, and said microprocessor is further programmed to compare said second motion detection signal with said first motion detection signal to determine the direction of rotation of the rotator by quadrature is disclosed (column 10, lines 3-18, Hodgetts; plural sensors are provided for measuring the frequency or speed of a club head or target by comparing or evaluating the common frequency of the target between the sensors and it

would have be obvious at the time of invention to incorporate plural sensors with plural encoders in a single encoder, motion detector device to achieve quadrature by differing the phase angle between the common frequency of the sensors by 90 degrees since it would have been obvious to try this technique that is normally used in measuring motor frequency at multiple positions).

Regarding claims 14, 17, 27, 45 and 47, one of said first and second optical encoder rings comprises a home formation of unique size or unique spacing as compared with the other formations on said one optical encoder ring / one ring for allowing the rotational orientation of the respective rotatable part, and thus the rotational orientation of the target, to be determined (column 3, lines 25-36 and column 4, lines 47-67, Hodgetts; it would have been obvious at the time of invention to provide the formations or fingers of the training device with home formations or fingers having unique size and spacing since calculation of rate of decay or error value would require a particular damping constant to achieve the damping of the harmonic motion required to bring the target to the home or rest position different from other positions during rotation or oscillation),

the home formation being positioned on said one encoder ring such that said home formation is positioned adjacent the respective photo-emitter and photo-detector when the target is in a home position; and said microprocessor is programmed with a selectively operable home restoration routine, which home restoration routine comprises outputting appropriate motor control signals for controlling said motor to drive said rotator at a constant angular velocity whilst processing the respective motion detection signal to detect the home formation, and when said home formation is detected ceasing output of said motor control signals to halt operation of the motor, thereby bringing said rotator to rest at the home position, or **in other words**, home restoring means which are adapted to generate a home restoration signal for controlling said motion controlling means to move the target at a constant speed in its orbit, and to analyze the pulsed motion detection signal generated by the first and second motion detectors for

determining when the home formation is disposed adjacent the respective photo-emitter and photo-detector, said home restoring means being configured to control the motion controlling means then to halt so that the target is positioned at the home position is disclosed (column 3, lines 25-36 and column 4, lines 47-67, Hodgetts; it would have been obvious at the time of invention to position or locate the home formation adjacent to the photo-emitter and photo-detector since the gap of the home formation would be required to break the light between the sensors).

Regarding claims 16, 46 and 61, the respective rotatable part is arranged such that said home formation is disposed adjacent the respective photo-emitter and photo-detector when the target is in / at the home position (column 3, lines 25-36 and column 4, lines 47-67, Hodgetts; it would have been obvious at the time of invention to arrange the rotator so as to position or locate the home formation adjacent to the photo-emitter and photo-detector since the gap of the home formation would be required to break the light between the sensors).

Regarding claim 32, the motion controlling means are configured to apply selectively a plurality of different, predetermined, user-selectable values of resistance to rotation of the rotator, and means are provided to enable a user to select a desired one of said predetermined values (column 4, line 34 to column 5, line 6, Hodgetts; a motor controller is provided that is a variable frequency controller).

Regarding claim 60, the detector comprises a rotatable part and a fixed part, the rotatable part being coupled to the target such that movement of the target in its orbit when struck causes corresponding rotation of the rotatable part about an axis of rotation relative to the fixed part, wherein one of said rotatable and fixed parts comprises an optical encoder ring which is disposed substantially co-axially with the axis of rotation, and the other of said parts comprises a photo-emitter and a photo-detector adapted to detect light emitted by said photo-emitter, wherein said encoder ring comprises a **home**

formation which either interrupts said beam or allows passage of said beam, as the rotatable part rotates, to allow orientation of the target to be determined (column 3, lines 25-36 and column 4, lines 47-67, Hodgetts).

The claimed features of claims 10-13, 15, 26, 33 and 41-44 do not appear to be disclosed in Russell; therefore, attention is directed to Hodgetts, which teaches

Regarding claims 10 and 41, the phases of said first and second pulsed signals are offset by about 90 degrees (column 10, lines 11-18, Hodgetts; achieving a phase angle between the common frequency of plural sensor signals to be 90 degrees would have been obvious to try since this technique is normally used in measuring motor frequency at multiple positions).

Regarding claims 11 and 42, the motion controlling means comprise:

a motor which is drivingly coupled to said target for controlling movement thereof; and motor controlling means for controlling operation of the motor (column 4, line 34 to column 5, line 6, Hodgetts).

Regarding claims 12, 26 and 43, a motor controlling means comprise an H-bridge motor drive (column 7, line 55 to column 8, line 5, Hodgetts; it would have been obvious at the time of invention to use a H-bridge motor drive controller to drive a motor since H-bridge drives are normally used in the process of controlling AC or DC motors).

Regarding claims 13 and 44, restoring means for restoring the target to a home position is disclosed (column 3, lines 25-36 and column 4, lines 47-67, Hodgetts).

Regarding claim 15, the home formation is configured so as to alter transiently the phase off-set between said first and second motion detection signals when the

target is at its home position (column 3, lines 25-36 and column 4, lines 47-67, Hodgetts; the rate of decay or error value for damping the harmonic frequency of the target motion changes over a short time span, normally in milliseconds, or transiently to reach the home or rest position).

Regarding claim 33, the motion controlling means comprise a motor drivably connected to said rotator (column 4, line 34 to column 5, line 6, Hodgetts).

Claims 3, 7-8 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russell in view of Hodgetts, and even further in view of Mangeri (US Patent 5,255,920). Figures are described with reference characters where necessary for clarity.

Russell alone or in combination with Hodgetts substantially teaches features of the claimed invention as described above.

The claimed speed and elapsed time calculation features of claim 3 do not appear to be substantially disclosed in Russell alone or in combination with Hodgetts; therefore, attention is directed to Mangeri, which teaches

Regarding claim 3, processing means are adapted to calculate a notional relationship between the instantaneous speed of the target and the elapsed time after striking said target based on said notional total distance, said measuring means are adapted to measure continually the elapsed time after striking the target and the actual instantaneous speed of the target as it moves in said orbit, and said motion controlling means are adapted to compare the actual instantaneous speed with said notional instantaneous speed and to adjust continually the speed of the target accordingly to

ensure that the target moves about said total distance (column 3, lines 25-43, Mangeri; a calculation of speed and elapsed time is made to determine the target travel distance via a fixed angle of rotation of a target).

Mangeri suggests that a device that provides at least a theoretical distance of ball carry and deviation based on calculation and subsequent prediction of the quality of the golfer's stroke and data feedback to the golfer will help the golfer develop his posture, swing and other necessary parameters for an effective golf game (column 1, lines 13-18, Mangeri).

Thus, it would have been obvious to one having ordinary skill in the art at the time the applicant's invention was made to modify Russell in view of the teachings of Hodgetts, and further in view of the teachings of Mangeri for the purpose of exchanging the interchangeable or upgradeable target travel distance sensing features of Russell alone or in combination with Hodgetts with the target speed and elapsed time features of Mangeri in order to aid a golfer in developing their posture, swing and other parameters need to produce an effective golf game by target travel distance data to the golfer based on the golfer's swing or stroke.

The claimed features of claims 7 and 38 do not appear to be disclosed in Russell alone or in combination with Hodgetts; therefore, attention is directed to Mangeri, which teaches

Regarding claims 7 and 38, a direction determining means for determining the direction of movement / rotation of the target in its orbit is disclosed (column 1, lines 34-

46, Mangeri; a direction determining means or meter is used to determine the angle of direction of travel of a target golf ball).

Regarding claims 8 and 39, Russell alone or in combination with Hodgetts substantially teaches features of the claimed invention as described above.

However, Russell alone or in combination with Hodgetts does not substantially teach a direction determining means configured to be used in connection with a sensor as claimed. Therefore, attention is directed to Mangeri, which teaches

Regarding claims 8 and 39, direction determining means comprise a second motion detector which is adapted to generate a second pulsed motion detection signal in response to movement of the target, the frequency of said second pulsed signal corresponding to the speed of the target and being substantially the same as the frequency of the first pulsed signal, and comparing means / signal comparing means for comparing the first and signal signals, the phases of the first and second pulsed signals being off-set / mutually off-set to allow said comparing means to determine, and said comparing means being configured / programmed to determine, the direction of movement of the target by quadrature (column 1, lines 34-46, Mangeri; it would have been obvious at the time of invention to use the meter in communication with plural sensors to compute frequency of rotation based on quadrature since the amount of deviation of rotation in terms of a numerical distance was necessary or vital to aid the golfer in training).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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E US-3,601,408, Wright

F US-4,014,552, Watson

G US-6,277,030 B1, Baynton et al.

H US-6,913,543 B2, Chapman et al.

I US-5,125,844, Grant et al.

J US-4,583,738, Fava

K US-5,718,639, Bouton

L US-5,056,790, Russell

M US-4,251,077, Pelz et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arthur O. Hall whose telephone number is (571) 270-1814. The examiner can normally be reached on Mon - Fri, 8:00am - 5:00 pm, Alt Fri, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jackson can be reached on (571) 272-4697. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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